

## Road Scholar Competition Study Guide

### State Highway Map

1. How are distances computed in general (that is, as the crow flies or straight-line distance)?
2. What is the primary method of computing distances along  
State Highways?  
U.S. (Federal) Highways?  
Interstate Highways?
3. A map that usually appears in the corner of another map, and that shows an enhanced view of part of an area covered by the larger map is called what?
4. Where, in general, are state capitals located?
5. If multiple route markers appear on the same road symbol, what does this indicate?
6. In what two ways are roads classified on a highway map?
7. What types of features/information can city maps show that state maps can't?
8. Do 2-digit even-numbered interstate highways run east-west or north-south?
9. Do 2-digit odd-numbered interstate highways run east-west or north-south?
10. What is a city containing a county government called?
11. What is a city containing a state government called?
12. Three-digit numbered interstates with an even first digit (like I-270) generally divert through traffic around major cities (like St. Louis). What name is given to such a road?
13. Interstate and federal highways going around densely populated small towns (like Rolla or Pacific) occasionally have business loops associated with them. What is a business loop?
14. A road map is an example of a planimetric map. What does the term "planimetric" mean?

### Topographic Map

1. What do hachures on a contour indicate?
2. How do the calculation and expression of a stream gradient compare with the calculation and expression of a slope gradient?
3. Contours crossing drains make "U-turns" as they do so. What are the "U-turns" called?

4. Do contour “U-turns” point upstream or downstream?
5. What does a bench mark indicate?
6. Contours that coalesce (that is, “pile up”) are indicated by what symbol?
7. What useful plot can be derived from a contour map?
8. What does the plot in question 7 indicate?
9. Distinguish between a fresh-water lake and a salt-water lake with respect to a contour plot.
10. Contour patterns indicate what kinds of topographical features?
11. Contours indicate elevation with respect to what datum/reference?
12. Why is the datum in question 11 used?
13. Latitude is measured north or south of what reference?
14. Longitude is measured east or west of what reference?
15. Contour values are \_\_\_\_\_ multiples of the contour interval.
16. Do contours on opposite sides of a stream have the same value or different values? Why?
17. May contours intersect?
18. By what other name is the USGS 1:24,000 scale topo map known?

### **Geodesy**

1. A course of constant azimuth/bearing on the Earth is a spiral. What is it on a standard Mercator map?
2. The process by which a 2-dimensional map is derived from a 3-dimensional surface is called what?
3. What inherent problem exists in question 2?
4. Why can't the poles be shown on a standard Mercator map?
5. How is the difficulty in question 4 resolved?

6. The Mercator projection is also known by what other name?
7. Define the following terms related to map projections: conformal, equal-area, equidistant, rhumb line.
8. A compass indicates magnetic North. What is the deviation of this reading from true North (geographic North) called?
9. How would an airline pilot make use of azimuths (besides the situation described in question 1)?
10. In the Sector Reference System, a USGS 1:24,000 scale topographic map is divided into how many parts (sectors)?  
What are the dimensions of a sector?
11. Why is the Public Land Survey System (PLSS) used?
12. In the Public Land Survey System, what are the dimensions and area of a township?
13. In the Public Land Survey System, what are the dimensions and area of a section?
14. How many acres are in a PLSS section?
15. In the Public Land Survey System, what are the dimensions and area of a  $\frac{1}{4}$  - section?